

Clothes treating apparatus

Patent Number: EP0816552, A3, B1

Publication date: 1998-01-07

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Requested Patent: JP10080331

Application Number: EP19970304447 19970624

Priority Number(s): US19960020599P 19960626 = US 5,815,961

IPC Classification: D06F73/02

EC Classification: D06F73/02, D06F71/16

Equivalents: CN1081702B, CN1170061

Cited Documents: DE3205234; US3326427; GB2189522; US5305484; US3961733;
EP0122569

Abstract

A clothes treating apparatus and method for subjecting clothes items to moisture, pressure and heat for refreshing and dewrinkling the clothes items. A cabinet defines an interior region for receiving clothes, the interior region having opposed inner side surfaces. A door is hingedly connected to the cabinet for closing the interior region. An inflatable hanger for supporting shirt-like clothes items is disposed within the interior region. A blower selectively inflates the inflatable hanger for pressing the shirt-like clothes item against the cabinet inner side surfaces. A steam generation means is provided for introducing moist air into the cabinet for humidifying the clothes item disposed therein. A heater and fan supply heated air into the interior region for drying the shirt-like clothes items disposed therein. During the dewrinkling cycle, steam is introduced into the interior region while the inflatable hanger assembly is periodically inflated. Following the steaming period, the inflatable hanger is inflated while the clothes are subject to warm air such that the clothes wrinkles are pressed out and the clothes are partially dried, setting the clothes in a smooth appearance. Heated air is then delivered into the interior region to completely dry the clothes item.

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 816 552 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
11.09.2002 Bulletin 2002/37

(51) Int Cl.7: **D06F 73/02**

(21) Application number: **97304447.2**

(22) Date of filing: **24.06.1997**

(54) **Clothes treating apparatus**

Apparat zum Behandlung von Bekleidungsstücken

Appareil pour traiter les vêtements

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **26.06.1996 US 20599 P**

(43) Date of publication of application:
07.01.1998 Bulletin 1998/02

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Description

[0001] The present invention relates to a clothes treating apparatus and more particularly to an apparatus for deodorizing and dewrinkling clothes items through the application of moisture, heat, pressure, and tension.

[0002] Clothes steaming and drying cabinets for treating clothes items are known. For example, U.S. Pat. No. 3,752,373 discloses a cabinet comprising a housing of flexible material which defines an interior region for hanging clothes. A steam generator is mounted in the lower region of the housing to steam the clothes. A fan and heating element are also provided in the lower portion of the housing for delivering heated air into the interior region for drying and airing the clothes.

[0003] A significant shortcoming of this type of clothes cabinet is that it does not dewrinkle clothes very well. It is known that successful dewrinkling of clothes items is best achieved by applying a combination of heat, moisture, pressure, and tension to the clothes. U.S. Pat. No. 3,752,373 and equivalent prior art designs provide no means for applying pressure to clothes items.

[0004] An example of an attempt to overcome this shortcoming in the prior art is found in U.S. Pat. No. 5,305,484. This patent discloses a cabinet for receiving clothes having a steam delivery means and a hot air delivery means. The appliance includes a steaming cycle and a drying cycle. Hangers and a bar are provided for suspending clothes items and weighted bars are provided to tension the clothes such that wrinkles are removed. In this system tension is in effect substituted for pressure such that clothes will be adequately dewrinkled. This type of system has not been found effective in dewrinkling clothes to a level approaching conventional clothes dewrinkling techniques.

[0005] There are inherent shortcomings in using tension as the primary mechanism to dewrinkle fabric and the system disclosed in U.S. Pat. No. 5,305,484 has been found to be relatively ineffective in dewrinkling. Applying weights to clothes as described above results in a non-uniform tensioning of the clothes wherein the clothes are pulled straight in only one direction. This can result in setting wrinkles into the clothes and stretching the clothes out of shape. In contrast, applying pressure to clothes, as in a conventional ironing process, smoothes the clothes out and applies pressure equally in all directions.

[0006] U.S. Pat. No. 3,480,187 discloses a pressing machine which utilizes an inflatable air bag for dewrinkling clothes items. The inflatable bag is dressed with a shirt-like garment and inflated such that the garment is tightly stretched. Hot air can be used to dry the garment while it is tightly stretched such that the garment is dewrinkled. This type of system includes several shortcomings. First, this type of system does not dewrinkle clothes very well. Further, this type of system requires a plurality of clamps to ensure that the garment is held in place when the garment is stretched.

[0007] U.S. Pat. No. 4,493,160 discloses a clothes treatment cabinet. This disclosure appears to illustrate a system wherein shirt-like articles are fitted to mannequin-like supports and subjected to steam. However, this reference provides no teaching for applying tension to a shirt-like clothes item to accomplish dewrinkling.

[0008] DE-A-3 205 234 discloses a steam-ironing cabinet in accordance with the precharacterising portion of claim 1 and which has an inflatable bag within a cabinet, clothes being put over the inflatable bag to be dewrinkled.

[0009] It can be readily seen that it would be a substantial improvement in the art to provide a clothes treatment cabinet which included means for effectively dewrinkling clothes by applying pressure to the clothes. Moreover it would be an improvement in the prior art to provide a clothes treatment cabinet which is easy to use and required relatively little effort to correctly position clothes items for dewrinkling and freshening.

[0010] According to the present invention there is provided a clothes treating apparatus comprising:

- a cabinet defining an interior region for receiving clothes, the interior region having opposed inner side surfaces;
- a door movably connected to the cabinet;
- a hanger for supporting a clothes item within the interior region, the hanger having an inflatable bag portion wherein the clothes item can be disposed about the inflatable bag portion; and
- a blower supported by the cabinet for inflating the inflatable bag;

characterised in that when inflated the inflatable bag presses the clothes item against the opposed inner side surfaces of the interior region.

[0011] In one embodiment during the dewrinkling cycle, steam is introduced into the interior region while the inflatable hanger assembly is periodically inflated. Following the steaming period, the inflatable hanger is inflated while the clothes are subject to heated air such that the clothes wrinkles are pressed out and the clothes are partially dried, setting the clothes in a smooth appearance. Subsequently, heated air is delivered into the interior region for completely drying the clothes item.

[0012] The preferred embodiment of the present invention provides for dewrinkling a plurality of clothes items in one cycle. In this second embodiment, a divider wall is hingedly supported within the cabinet for separating the interior region into two compartments, each compartment having opposed side surfaces. An inflatable hanger can be associated with one of the compartments such that when the inflatable hanger assembly is inflated the clothes item is pressed against the opposed side surfaces of the compartment in which the hanger is positioned. Alternatively, two inflatable hanger assemblies can be provided, one hanger being associated with each compartment. The door of the cabinet can in-

clude an inner recess and an inner door can be hingedly connected to the cabinet for separating the door recess compartment from the interior region of the cabinet. Still further, the clothes treating apparatus of the present invention can include a support bar disposed in the door recess or in one of the interior region compartments such that pants-like items can be supported and treated with humidity and hot air.

[0013] Exemplary embodiments of the invention will be described below with reference to the accompanying drawings, in which:

FIG. 1 is a top, front perspective view of the clothes treating cabinet apparatus of the present invention with the door open.

FIG. 2 is a perspective, detailed view of the inflatable hanger assembly shown in FIG. 1.

FIG. 3 is a partially cut away top, front and side perspective view of the lower portion of the cabinet of FIG. 1.

FIG. 4 is a front view of the cabinet of FIG. 1, illustrating the manner in which a shirt-like clothes item may be supported.

FIG. 5 is a chart illustrating the operation of the present invention.

FIG. 6 is a top, front perspective view of a preferred alternative embodiment of the clothes treating cabinet apparatus of the present invention with the door open.

FIG. 7 is a sectional view of the clothes treating cabinet apparatus of FIG. 6.

FIG. 8 is a chart illustrating an alternative operation of the present invention.

[0014] Referring to FIG. 1, there is illustrated a first embodiment of a clothes treating apparatus for steaming, dewrinkling, and deodorizing clothing according to the present invention. The apparatus 10 includes a main housing or cabinet 12. The cabinet 12 forms an interior region 14 having opposite side surfaces 14a and 14b, a top surface 14c, a bottom surface 14d and a rear surface 14e. A door 16 is hingedly connected to the cabinet 12 for closing the enclosure 14 formed by the cabinet 12. The door 16 includes an inner surface 16a wherein when the door 16 is closed, the rear wall 14e of the cabinet 12 and inner surface 16a of the door 16 form opposed inner side surfaces of the enclosure. A gasket 17 is provided disposed about the periphery of the door 16 for sealing the interface between the door 16 and cabinet 12.

[0015] The cabinet 12 includes an upper housing 18. The upper housing 18 supports a blower assembly 20 which is connected to an air supply duct 22. Alternatively, the blower may be housed in a lower housing 42 with a duct extending to connection 24. The air supply duct 22 has a connection end 24 (Fig. 2) which extends through the top surface 14c of the cabinet enclosure 14. When energized, the blower 20 moves air through the

duct 22 and out through the connection end 24.

[0016] An inflatable hanger assembly 26 including a rigid hanger body 28 and an inflatable bag 30 is supported within the cabinet interior region 14. The inflatable hanger assembly 26 is shown in detail in FIG. 2. The hanger body 28 includes a tubular inlet end 32, a hanger-like hollow body portion 34 and an elongated outlet end 36 which connects to the inflatable bag 30. The hanger body 28 may be contoured to enable easy gripping by a user for facilitating removal from the interior region 14. The tubular inlet end 32 is configured to connect to the connection end 24 such that the blower 20 may blow air into the hanger assembly 26. The means by which the tubular inlet end connects to the connection end can be any quick-connect type system for sealingly connecting two tubular members. For example, the inlet end 32 can be formed as a female end which receives a male type connection end 24 wherein a snap release button 38 on the connection end 24 engages a matching hole 40 provided on the tubular inlet end 32. Alternatively, a bayonet-type mount can be used as can any other suitable connector.

[0017] The inflatable bag 30 is removably mounted to the hanger body 28. The inflatable bag 30 has an opening 30a at its upper end and an opening 30b at its lower end. The opening 30a conforms to the shape of the tubular inlet 32. To mount the inflatable bag 30 to the hanger body 28, the hanger body 28 is inserted into the inflatable bag 30 through the opening 30b so that the inflatable bag 30 envelopes the hanger body 28. The hanger body 28 is then positioned so that the tubular inlet is inserted through the opening 30a. Once the hanger body 28 is properly positioned the upper end of the inflatable bag is sealably mounted to hanger body 28 by any suitable means, such as taping the inflatable bag 30 to the hanger body or providing the opening 30a with an elastic collar. The opening 30b is then sealed preferably by providing the lower end of the bag with a resealable closure.

[0018] The advantage of having a removable bag lies in both maintenance and performance of the clothes treating apparatus. The removable mounting permits the bag to be replaced if it is somehow damaged as well as providing ease of access while dressing the bag with a garment. This is especially important for pull over type garments which do not have zippered or buttoned fasteners. Also, different bag sizes and configurations may be needed depending on the size and type of clothing being treated.

[0019] Once mounted and sealed to the hanger body 28, the inflatable bag 28 hangs downwardly from the hanger body 28 wherein air supplied to the hanger body 28 inflates the inflatable bag 30. When the inflatable bag 30 is inflated and the door is closed, the side walls of the bag 30 press against rear wall 14e and the inner surface 16a. In this manner, when the bag is inflated, any shirt-like clothes item placed about the inflatable bag is pressed to remove wrinkles. The pressure ap-

plied to the clothes can be designed, by appropriately sizing the blower 20, to optimize dewrinkling clothes. In some cases (dewrinkling delicate clothes), less dewrinkling pressure may be desired. Where less dewrinkling pressure is desired, the inflatable bag 30 may be replaced with a perforated bag which, due to the perforations, applies less pressure to clothes item placed about the inflatable bag. The blower 20 may also be of a variable speed type such that variable dewrinkling pressure may be obtained by varying the blower speed. Alternatively, a fixed speed blower can provide variable speeds by using a flow restricter actuated either mechanically or electrically.

[0020] Referring to Figs. 1 and 3, the lower housing 42 is disposed on the bottom portion of the cabinet 12. The lower housing 42 supports a means for moisture generator 44 and a means for generating heated air 46 for delivery into the interior region 14. The moisture generator 44 can be similar to the steam generating means disclosed in U.S. Pat. No. 4,810,854 to Jursich et al. The lower housing 42 further supports a controller which is controllably connected to the moisture generator 44, the heated air generating means and the blower 20 for controlling their operation.

[0021] FIG. 3 illustrates the details of the lower housing 42. The moisture generator 44 comprises a removable reservoir 48, a base 50 and a steam conduit 52. The reservoir includes a handle 54 for facilitating removing and refilling the reservoir 48 with water. The reservoir 48 is supported on the base 50 and a valve 56 is provided in the bottom of the reservoir for allowing water to flow from the reservoir 48 into a pocket (not shown) formed in the base 50. When the reservoir 48 is removed from the base 50, the valve 56 is biased to a closed position so that no water may exit through the valve 56. The base 50 includes a cup shaped boiler (not shown) wherein the steam generated in the cup-shaped boiler is directed up through the steam conduit 52 for delivery into the interior region 14 through a steam dispersing cap 58.

[0022] The hot air generating means comprises a heater 60 mounted adjacent a fan 62 disposed in a duct 64. The fan 62 draws air from the exterior of the cabinet 12 through inlet openings (not shown). The fan 62 moves air over the heater 60 through the duct 64 wherein the hot air is directed into the interior region 14 through grill 66. Air is exhausted from the interior region 14 by passing through exhaust duct 68 (FIG. 1) disposed in the upper housing. In this manner, moist air from the interior region 14 is exhausted through the top of the cabinet 12 and may be connected with duct work such that the exhaust air is vented out of the user's home as is conventional in dryer applications.

[0023] Turning now to FIG. 4, details of a beneficial system for supporting clothes within the interior region 14 will be described. The inflatable hanger assembly 26 is designed to support a shirt-like clothes item within the interior region 14 similar to a conventional hanger.

Hanging the shirt-like clothes item is facilitated by the removability of the hanger assembly from the cabinet 12. One problem area in a dewrinkling process such as provided in the present invention are the shirt sleeves. To satisfactorily dewrinkle shirt sleeves they must be supported in a manner to minimize undesirable crease lines. It has been found that supporting a shirt-like item on the hanger assembly 26 while leaving the sleeves to hang adjacent the body of the shirt results in unsatisfactory dewrinkling performance.

[0024] Accordingly, the present invention includes a shirt sleeve support system. Pivotably supported along both sides of the interior region 14 are weighted shirt sleeve bars 70. Each bar has a tapered edge surface 72 around which a shirt sleeve can be wrapped and stretched toward the top center portion of the interior region 14. The sleeve bars 70 may be hingedly supported as shown or alternatively may be supported by cords attached to the side walls of the interior region 14. Clamps 74 are provided connected to support cords 73 which extend from retractable reels 75 disposed within the upper housing 18. Alternatively, the clamps 74 may be supported by elastic bands connected to the top surface 14c of the interior region 14. Shirt sleeves which are wrapped around the shirt sleeve bars 70 may be tensioned by securing the clamps 74 to the terminal edges of the shirt sleeves such that the shirt sleeves are drawn tightly across the bars 70 in an ideal manner for dewrinkling.

[0025] To enhance the dewrinkling performance of the present invention, several further clothes preparation steps may be taken. The shirt-like clothes item, when placed about the hanger assembly, may have one or more of its front buttons buttoned to secure the clothes item in place. Moreover, the bottom of the shirt may be secured by weighted clamps 77. The weighted clamps may be secured to the side wall of the interior region by means of an elastic cord.

[0026] Once a shirt-like clothes item is correctly supported on the hanger assembly 26, the clothes item is subject to moisture, heat and pressure to freshen and remove wrinkles from the shirt-like clothes item. FIG. 5 illustrates a preferred cycle for refreshing and removing wrinkles from the clothes item. The cycle is approximately 30 minutes in total length. During the first 15 minutes, referred to as the steam period, steam is continuously supplied to adequately dampen the clothes item. At predetermined periodic points, for 30 second periods, the blower 20 is energized to inflate the bag 30. This begins the dewrinkling process and facilitates the absorption by the clothes item of any moisture condensing on the side walls of the interior region 14. Cool air may be recirculated in the cabinet to ensure uniform distribution of moisture on the garment.

[0027] At the conclusion of the steam period, the blower 20 is energized to inflate the bag 30 for approximately 4 minutes while the heated air is supplied into the interior region 14. During this time, the clothes are pressed

against the interior surfaces 14e and 16a such that wrinkles are removed and the clothes items are smoothed. Subsequent to this clothes pressing period, hot air is supplied by the hot air generator into the enclosure 14 to thoroughly dry the clothes item.

[0028] An advantage of this method of operation is that during the steam period, a layer of moisture is generally evenly distributed on the surfaces 14e and 16a. Thus, when the clothing is pressed against the surfaces 14e and 16a a thin layer of moisture is deposited evenly onto the surface of the clothing as the hot air is supplied to the clothing. The thin layer of moisture aids in dewrinkling the clothing and since the moisture layer is evenly distributed, there is no problem with spotting of the clothing. Furthermore, the thin layer of moisture is not sufficient to saturate the clothing, which can have a negative impact on dewrinkling performance in addition to increasing drying time, especially with certain types of material.

[0029] It is also contemplated that the clothes treating apparatus can be operated in such a manner as to provide a gentle dry cycle. For a gentle dry cycle, it is assumed that an already cleaned and still wet article of clothing will be mounted to the hanger assembly 26 and exposed to heated air for a period of time depending on the type of fabric being dried. At the end of the initial drying period, the garments are subjected to a steaming period in which the fabric is relaxed to help prevent distortion and wrinkling. Optionally, the bag-hangers may be inflated to remove wrinkles after the steaming period. After the steaming (and pressing) cycle(s), the garment undergoes a short (10 minute) drying period to remove moisture generated by the steam. An advantage of gentle dry with a bag over that of normal steam or drying cabinets is that the friction between the garment and bag may prevent distortion.

[0030] FIGS. 6 and 7 illustrate an alternative, preferred embodiment of the present invention for a clothes treatment apparatus 10' which is designed with the capability of simultaneously pressing more than one clothes item. In this embodiment, the upper housing 18' supports a blower 20' which provides air through a first duct 76 and a second duct 78. Both air supply ducts 76 and 78 have connection ends 80 and 82, respectively. The connection ends are capable of engaging a tubular inlet end of an inflatable hanger assembly in a similar manner as described above. In this manner, two inflatable hanger assemblies, 81 and 83, are supported within the interior region 14'.

[0031] A divider wall 84 is hingedly mounted to one of the inner side surfaces 14a' of the interior region 14'. The divider wall can be secured in a closed position within the interior region 14' by a latch (not shown). The divider wall 84 is positioned such that in a closed position, the divider wall 84 is disposed between the two inflatable hanger assemblies.

[0032] When both the divider wall 84 and the inner door 86 are in a closed position, they form compart-

ments 88 and 90 in which the hanger assemblies 81 and 83 hang. When the hanger assemblies are inflated, the clothes item supported on first hanger assembly 81 is pressed against the rear surface 14e' and the opposed side surface 84a of the divider wall 84 while the clothes item supported on the second hanger assembly 83 is pressed against the opposed side surfaces 84b and 86a of the divider wall 84 and the inner door 86, respectively. In this fashion, two shirt like items may be pressed in a single cycle of the apparatus 10'.

[0033] To provide further capacity to the clothes treatment apparatus 10' the door 16' can be provided with a door recess 92 defined by the inner wall 16a' of the door 16'. A support bar 94 and a tension bar 96 can be supported within the door recess 92. An inner door 86 is also hingedly mounted to the inner wall 16a' and can be secured in a closed position by a latch (not shown). Pants-like clothes items can be supported from the bar 94 by use of clips 98 and subjected to the moisture and heat during the apparatus operation. To facilitate dewrinkling, the tension bar 96 can be secured to the pants-like clothes item along the clothes item bottom edge. Alternatively, weighted clamps may be secured to the pants-like clothes item to supply tension during the application of heat and moisture.

[0034] A support bar, similar to support bar 94, may also be connected to the top surface 14c' of the interior region 14' such that a pants-like clothes item may be disposed in one or both of the compartments 88 and 90. In this configuration, when the inflatable hanger assemblies 81 and 83 are inflated, the pants-like clothes item is pressed between the inflatable bag and the opposed surfaces. In this manner, the inflatable hanger assemblies 81 and 83 may be used to press either shirt-like clothes items or pants-like clothes items. It can be readily understood that use of the pants bar 94 in combination with an inflatable hanger assembly may be employed likewise in a single hanger assembly apparatus as above described in the first embodiment.

[0035] As described above, a perforated inflatable bag may be utilized to limit the pressure applied to a clothes item. Where a perforated bag is used in combination with a non-perforated bag in the multi-hanger bag system disclosed in FIGS. 6 and 7, a flow restrictor may be placed within the connection end supporting the perforated hanger bag such that the desired pressure may be established in the non-perforated inflatable bag.

[0036] FIG. 8 illustrates an alternative manner or mode of operating the present invention wherein the cabinet apparatus of the present invention can be used as a gentle dry apparatus for gently drying clothes after hand washing or after a conventional washer cycle. In this mode, fabric items are placed in the cabinet 12 - either supported by the inflatable hanger assemblies or hanging from support bars - and dried. The cycle includes an extended warm air dry for between 45 and 180 minutes during which time the heater 60 and fan 62 are energized. Following this period, steam is intro-

duced into the interior region for relaxing and partially dewrinkling the fabric items. Subsequently, warm air is supplied for about 10 minutes for thoroughly drying the clothes items.

[0037] It can be seen, therefore, that the present invention provides a unique clothes treatment cabinet which effectively dewrinkles clothes by applying humidity, pressure and heat.

Claims

1. A clothes treating apparatus (10) comprising:

a cabinet (12) defining an interior region (14) for receiving clothes, the interior region (14) having opposed inner side surfaces (14e, 16a); a door (16) movably connected to the cabinet (12);
a hanger (26) for supporting a clothes item within the interior region, the hanger (26) having an inflatable bag portion (30) wherein the clothes item can be disposed about the inflatable bag portion (30); and
a blower (20) supported by the cabinet (12) for inflating the inflatable bag (30); **characterised in that** when inflated the inflatable bag (30) presses the clothes item against the opposed inner side surfaces (14a, 16e) of the interior region (14).

2. The clothes treating apparatus according to claim 1, and further comprising a moisture generator (44) for introducing moist air into the interior region (14) of the cabinet (12) for humidifying the clothes item disposed therein.

3. The clothes treating apparatus according to any of the preceding claims, wherein the door (16) forms one of the opposed surfaces (16a).

4. The clothes treating apparatus according to any of the preceding claims, wherein the bag (30) is removably mounted to the hanger (26).

5. The clothes treating apparatus according to claim 4, wherein the bag (30) has a bottom opening (30b) with a resealable closure.

6. The clothes treating apparatus according to claim 5, wherein the bag (30) has an upper opening (30a) that is sealed relative to the hanger (26).

7. The clothes treating apparatus according to any one of the preceding claims, adapted to support within the cabinet (12) a clothes item including sleeves, the clothes treating apparatus further comprising:

means (74, 75) for tensioning the sleeves of the clothes item.

8. The clothes treating apparatus according to claim 7, further comprising:

a pair of sleeve bars (70) supported within the interior region (14) about which the sleeves of a clothes item disposed within the interior region (14) can be wrapped.

9. The clothes treating apparatus according to any one of claims 1 to 6, further comprising:

a pair of sleeve bars (70) supported within the interior region (14) about which the sleeves of a clothes item disposed within the interior region can be wrapped; and
means (74, 75) for tensioning the sleeves when they are wrapped about the sleeve bars (70)

10. The clothes treating apparatus according to claim 8 or 9, wherein said means (74, 75) for tensioning comprise:

a pair of retractable reels (75) or elastic bands supported adjacent the interior region (14), the reels (75) or bands having clamps (74) which can be secured to the sleeves of the clothes item such that the reels (75) or bands tension the sleeves about the sleeve bars (70).

11. The clothes treating apparatus according to any of the preceding claims, further comprising: means (46) for introducing heated air into the interior region (14) for drying the clothes item disposed therein.

12. The clothes treating apparatus according to claim 11, further comprising:

a controller for controlling the operation of the moisture generator (44), the means (46) for introducing heated air and the blower (20) to provide:

a steam period wherein the moisture generator (44) is operated for introducing moist air and the blower (20) is intermittently operated such that the inflatable bag (30) is periodically inflated during the steam period, followed by

a pressing period wherein the blower (20) is operated to inflate the inflatable bag (30), and then

a drying period wherein the means (46) for introducing heated air is operated for supplying heated air into the interior region (14).

13. The clothes treating apparatus according to any of the preceding claims, further comprising:

a divider wall (84) supported within the cabinet (12) for separating the interior region (14) into a plurality of compartments (88, 90), each compartment (88, 90) having opposed side surfaces,

wherein the hanger (81, 83) is associated with one of the compartments (88, 90) such that when the inflatable bag (30) is inflated the clothes item is pressed against the opposed side surfaces (14e', 84a; 84b, 86a) of the compartment (88, 90) in which the hanger (81, 83) is positioned.

14. The clothes treating apparatus according to claim 13, further comprising:

a plurality of hangers (81, 83) for supporting clothes items within the cabinet (12), one hanger (81, 83) being associated with each compartment (88, 90), each hanger (81, 83) having an inflatable bag portion (30).

15. The clothes treating apparatus according to claim 14, further wherein the divider wall (84) is hingedly connected to the cabinet (12) and can be rotated between an open and closed position.

16. The clothes treating apparatus according to any of the preceding claims, further comprising:

a support bar (94) connectable to the cabinet (12) for hanging a pants-like clothes item within the interior region (14).

17. The clothes treating apparatus according to any of the preceding claims, further wherein:

the door (16') has an inner surface (16a') forming a door recess compartment (92), and the clothes treating apparatus further comprises:

a hinged inner door (86) for separating the door recess compartment (92) from the interior region (14); and

a support bar (94) for supporting a clothes item within the door recess compartment (92) wherein moist air and heated air may be supplied into the door recess compartment (92) for treating clothes hanging therein.

Patentansprüche

1. Apparat (10) zur Behandlung von Bekleidungsstük-

ken mit:

einem Schrank (12), der einen Innenbereich (14) zur Aufnahme von Bekleidungsstücken definiert, der einander gegenüber liegende innere Seitenflächen (14e, 16a) aufweist; einer Tür (16), die bewegbar mit dem Schrank (12) verbunden ist;

einem Aufhänger (26) zum Aufhängen eines Bekleidungsstücks im Innenbereich, der einen aufblasbaren Beutelteil (30) aufweist, wobei das Bekleidungsstück um den aufblasbaren Beutelteil (30) herum positionierbar ist; und einem Gebläse (20), das vom Schrank (12) gestützt wird und mit dem der aufblasbare Beutel (30) aufblasbar ist, **dadurch gekennzeichnet, dass** der Beutel (30), wenn aufgeblasen, das Bekleidungsstück auf die einander gegenüber liegenden inneren Seitenflächen (14a, 16e) des Innenbereichs (14) drückt.

2. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 1, weiterhin mit einem Feuchtigkeitsgenerator (44), mit dem feuchte Luft in den Innenbereich (14) des Schranks (12) einleitbar ist, um das dort befindliche Bekleidungsstück anzufeuchten.

3. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche, bei dem die Tür (16) eine der einander gegenüber liegenden Flächen (16a) bildet.

4. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche, bei dem der Beutel (30) abnehmbar am Aufhänger (26) befestigt ist.

5. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 4, bei dem der Beutel (30) am unteren Ende eine Öffnung (30b) mit einem mehrfach verschließbaren Verschluss aufweist.

6. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 5, bei dem der Beutel (30) am oberen Ende eine Öffnung (30a) enthält, die gegen den Aufhänger (26) dicht abgeschlossen ist.

7. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche, bei dem im Schrank (12) ein Bekleidungsstück mit Ärmeln aufnehmbar ist, weiterhin mit einer Einrichtung (74, 75) zum Straffziehen der Ärmel des Bekleidungsstücks.

8. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 7, bei dem weiterhin im Innenbereich (14) ein Paar Ärmelplatten (70) angeordnet

ist, um die die Ärmel eines im Innenbereich (14) befindlichen Bekleidungsstücks herum legbar sind.

9. Apparat zur Behandlung von Bekleidungsstücken nach einem der Ansprüche 1 bis 6, weiterhin mit: 5

einem Paar Ärmelplatten (70), die im Innenbereich (14) angeordnet sind und um die die Ärmel eines im Innenbereich (14) befindlichen Bekleidungsstücks herum legbar sind; und 10
einer Einrichtung (74, 75) zum Straffziehen der Ärmel des Bekleidungsstücks, wenn diese auf die Ärmelplatten (70) aufgezogen sind.

10. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 8 oder 9, bei der die Straffzieheinrichtung (74, 75) aufweist: 15

ein Paar rückziehbarer Spulen (75) oder elastischer Bänder, die nahe dem Innenbereich (14) gelagert sind, wobei die Spulen (75) oder Bänder 20
Klemmen (74) aufweisen, die an die Ärmel des Bekleidungsstücks ansetzbar sind derart, dass die Spulen (75) oder Bänder die Ärmel auf den Ärmelplatten (70) straffen. 25

11. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche, weiterhin mit: 30

einer Einrichtung (46) zum Einleiten erwärmter Luft in den Innenbereich (14) zum Trocknen des dort befindlichen Bekleidungsstücks.

12. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 11, weiterhin mit: 35

einer Steuerung zum Steuern des Feuchtigkeitsgenerators (44), der Warmlufteinrichtung (46) und des Gebläses (20) derart, dass sie bereitstellt: 40

ein Dämpfintervall, in dem der Feuchtigkeitsgenerator (44) arbeitet, so dass feuchte Luft eingeleitet wird, und das Gebläse 45
(20) intermittierend so betätigt wird, dass der aufblasbare Beutel (30) während des Dämpfintervalls in regelmäßigen Abständen aufgeblasen wird, gefolgt von einem Plättintervall, in dem das Gebläse 50
(20) betätigt wird, um den aufblasbaren Beutel (30) aufzublasen, und dann ein Trockenintervall, in dem die Warmlufteinrichtung (46) betätigt wird, um erwärmte Luft in den Innenbereich (14) zu 55
leiten.

13. Apparat zur Behandlung von Bekleidungsstücken

nach einem der vorgehenden Ansprüche, weiterhin mit:

einer Trennwand (84), die im Schrank (12) gehalten ist und den Innenbereich (14) zu einer Vielzahl von Kammern (88, 90) unterteilt, die jeweils einander gegenüber liegende Seitenflächen aufweisen,

wobei der Aufhänger (81, 83) einer der Kammern (88, 90) so zugeordnet ist, dass, wenn der aufblasbare Beutel (30) aufgeblasen wird, das Bekleidungsstück auf die gegenüberliegenden Seitenflächen (14e', 84a; 84b, 86a) der Kammer (88, 90) gedrückt wird, in der der Aufhänger (81, 83) sich jeweils befindet.

14. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 13, weiterhin mit

einer Vielzahl von Aufhängern (81, 83) zur Aufnahme von Bekleidungsstücken im Schrank (12), wobei jeder Kammer (88, 90) jeweils ein Aufhänger (81, 83) zugeordnet ist und jeder Aufhänger (81, 83) einen aufblasbaren Beutelteil (30) aufweist.

15. Apparat zur Behandlung von Bekleidungsstücken nach Anspruch 14, bei dem weiterhin die Trennwand (84) scharnierrmäßig mit dem Schrank (12) verbunden und zwischen einer Offen- und einer Schließstellung schwenkbar ist. 30

16. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche weiterhin mit

einer Stange (94), die mit dem Schrank (12) verbindbar ist und mit der hosenartige Bekleidungsstücke im Innenbereich (14) aufhängbar sind.

17. Apparat zur Behandlung von Bekleidungsstücken nach einem der vorgehenden Ansprüche, bei dem die Tür (16') eine Innenfläche (16a') hat, die in der Tür einen vertieften Bereich (92) bildet, und der Apparat weiterhin aufweist:

eine scharnierartig angeschlagene Innentür (86), die den vertieften Bereich (92) in der Tür vom Innenbereich (14) trennt, und eine Stange (94), mit der ein Bekleidungsstück im vertieften Bereich (92) in der Tür aufhängbar ist, wobei feuchte und erwärmte Luft in den vertieften Bereich (92) in der Tür einleitbar sind, um dort hängende Bekleidungsstücke zu behandeln.

Rev ndications

1. Appareil (10) de traitement de vêtements,

comprenant :

- un coffret (12) délimitant une région interne (14) destinée à loger des vêtements, la région interne (14) ayant des surfaces latérales internes opposées (14e, 16a),
 une porte (16) raccordée au coffret (12) afin qu'elle soit mobile,
 un cintre (26) destiné à supporter un article d'habillement dans la région interne, le cintre (26) ayant une partie (30) de sac gonflable dans laquelle l'article d'habillement peut être disposé autour de la partie (30) de sac gonflable, et un ventilateur (20) supporté par le coffret (12) et destiné à gonfler le sac gonflable (30), **caractérisé en ce que**, lorsqu'il est gonflé, le sac gonflable (30) presse l'article d'habillement contre les surfaces latérales internes opposées (14a, 16e) de la région interne (14). 5
2. Appareil de traitement de vêtements selon la revendication 1, comprenant en outre un générateur d'humidité (44) destiné à introduire de l'air humide dans la région interne (14) du coffret (12) pour humidifier l'article d'habillement placé à l'intérieur. 10 25
3. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, dans lequel la porte (16) forme l'une des surfaces opposées (16a). 30
4. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, dans lequel le sac (30) est monté de façon amovible sur le cintre (26). 35
5. Appareil de traitement de vêtements selon la revendication 4, dans lequel le sac (30) a une ouverture inférieure (30b) ayant un organe de fermeture qui peut être fermé. 40
6. Appareil de traitement de vêtements selon la revendication 5, dans lequel le sac (30) a une ouverture supérieure (30a) qui est fermée de manière étanche par rapport au cintre (26). 45
7. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, destiné à supporter dans le coffret (12) un article d'habillement ayant des manches, l'appareil de traitement de vêtements comprenant en outre :
 un dispositif (74, 75) destiné à tendre les manches de l'article d'habillement. 50 55
8. Appareil de traitement de vêtements selon la revendication 7, comprenant en outre :

une paire de barres (70) à manches supportées dans la région interne (14) et autour desquelles les manches d'un article d'habillement placé dans la région interne (14) peuvent être enveloppées.

9. Appareil de traitement de vêtements selon l'une quelconque des revendications 1 à 6, comprenant en outre :

une paire de barres (70) à manches supportées dans la région interne (14) et autour desquelles les manches d'un article d'habillement placé dans la région interne peuvent être enveloppées, et

un dispositif (74, 75) destiné à tendre les manches lorsqu'elles sont enveloppées autour des barres (70) à manches.

10. Appareil de traitement de vêtements selon la revendication 8 ou 9, dans lequel le dispositif (74, 75) destiné à tendre comprend :

deux bobines rétractables (75) ou bandes élastiques supportées près de la région interne (14), les bobines (75) ou bandes ayant des pinces (74) qui peuvent être fixées aux manches de l'article d'habillement afin que les rouleaux (75) ou bandes tendent les manches autour des barres (70) à manches.

11. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, comprenant en outre :

un dispositif (46) d'introduction d'air chaud dans la région interne (14) pour le séchage de l'article d'habillement placé à l'intérieur.

12. Appareil de traitement de vêtements selon la revendication 11, comprenant en outre :

un organe de commande du fonctionnement du générateur d'humidité (44), du dispositif (46) d'introduction d'air chaud et du ventilateur (20) afin qu'ils donnent :

une période de vapeur dans laquelle le générateur d'humidité (44) fonctionne pour introduire de l'air humide et le ventilateur (20) fonctionne par intermittence afin que le sac gonflable (30) soit gonflé périodiquement pendant la période de vapeur, suivie d'une période de pression dans laquelle le ventilateur (20) fonctionne pour gonfler le sac gonflable (30), puis
 d'une période de séchage dans laquelle le dispositif (46) d'introduction d'air chaud

fonctionne pour transmettre de l'air chaud à la région interne (14).

cavité de porte (92) pour le traitement des vêtements suspendus à l'intérieur.

13. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, comprenant en outre :

une paroi de séparation (84) supportée dans le coffret (12) et destinée à séparer la région interne (14) en plusieurs compartiments (88, 90), chaque compartiment (88, 90) ayant des parois latérales opposées, et dans lequel le cintre (81, 83) est associé à l'un des compartiments (88, 90) afin que, lorsque le sac gonflable (30) est gonflé, l'article d'habillement soit pressé contre les surfaces latérales opposées (14e', 84a ; 84b, 86a) du compartiment (88, 90) dans lequel se trouve le cintre (81, 83).

14. Appareil de traitement de vêtements selon la revendication 13, comprenant en outre :

plusieurs cintres (81, 83) destinés à supporter des articles d'habillement dans le coffret (12), un cintre (81, 83) étant associé à chaque compartiment (88, 90), chaque cintre (81, 83) ayant une partie de sac gonflable (30).

15. Appareil de traitement de vêtements selon la revendication 14, dans lequel la paroi de séparation (84) est en outre raccordée de manière articulée au coffret (12) et peut tourner entre des positions d'ouverture et de fermeture.

16. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, comprenant en outre :

une barre de support (94) qui peut être raccordée au coffret (12) pour la suspension d'un article d'habillement analogue à un pantalon dans la région interne (14).

17. Appareil de traitement de vêtements selon l'une quelconque des revendications précédentes, dans lequel : la porte (16') a une surface interne (16a') formant un compartiment à cavité de porte (92), et l'appareil de traitement de vêtements comporte en outre :

une porte interne articulée (86) destinée à séparer le compartiment à cavité de porte (92) de la région interne (14), et une barre (94) de support d'un article d'habillement dans le compartiment à cavité de porte (92) dans lequel de l'air humide et de l'air chaud peuvent être transmis dans le compartiment à

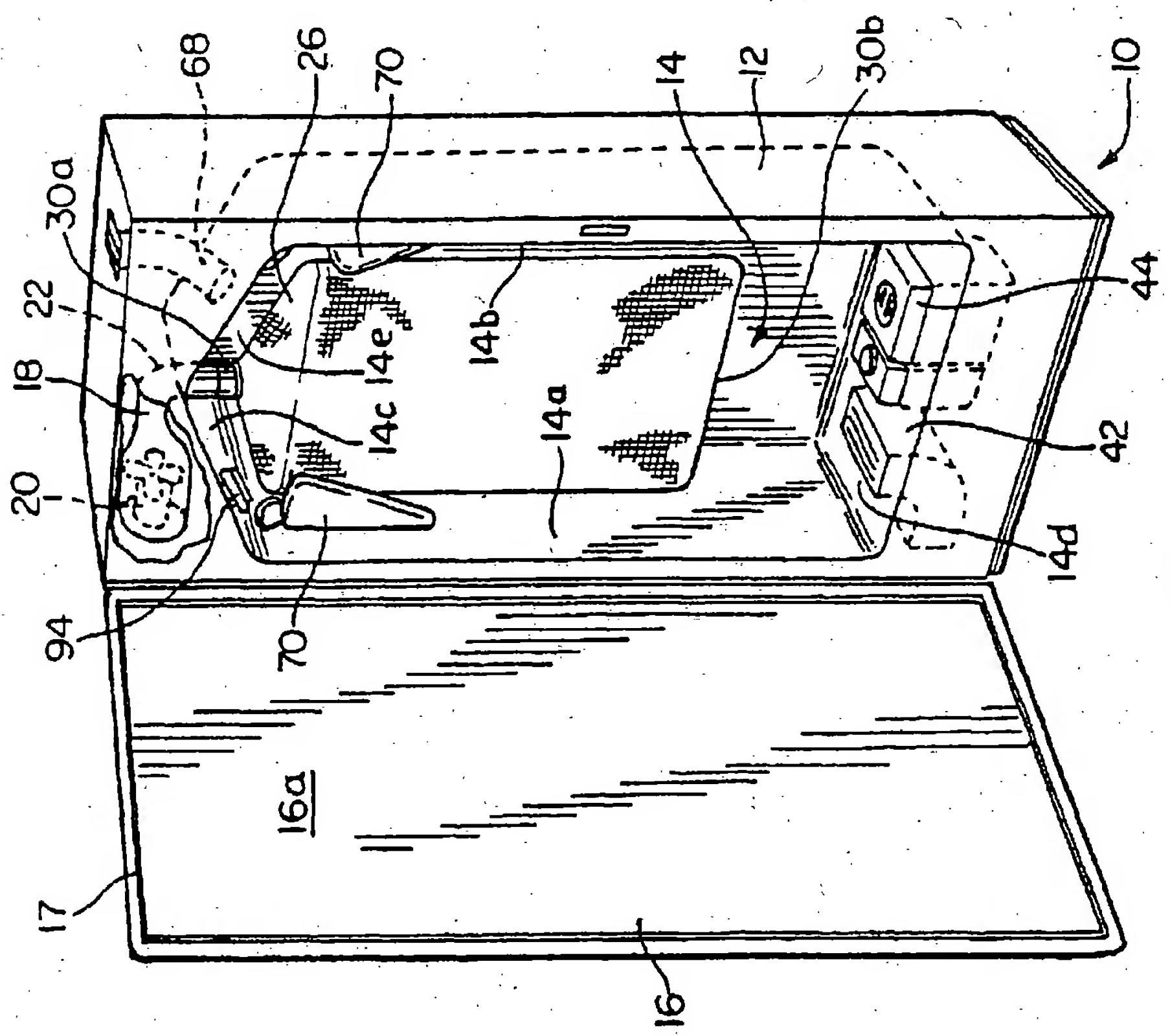


FIG. 1

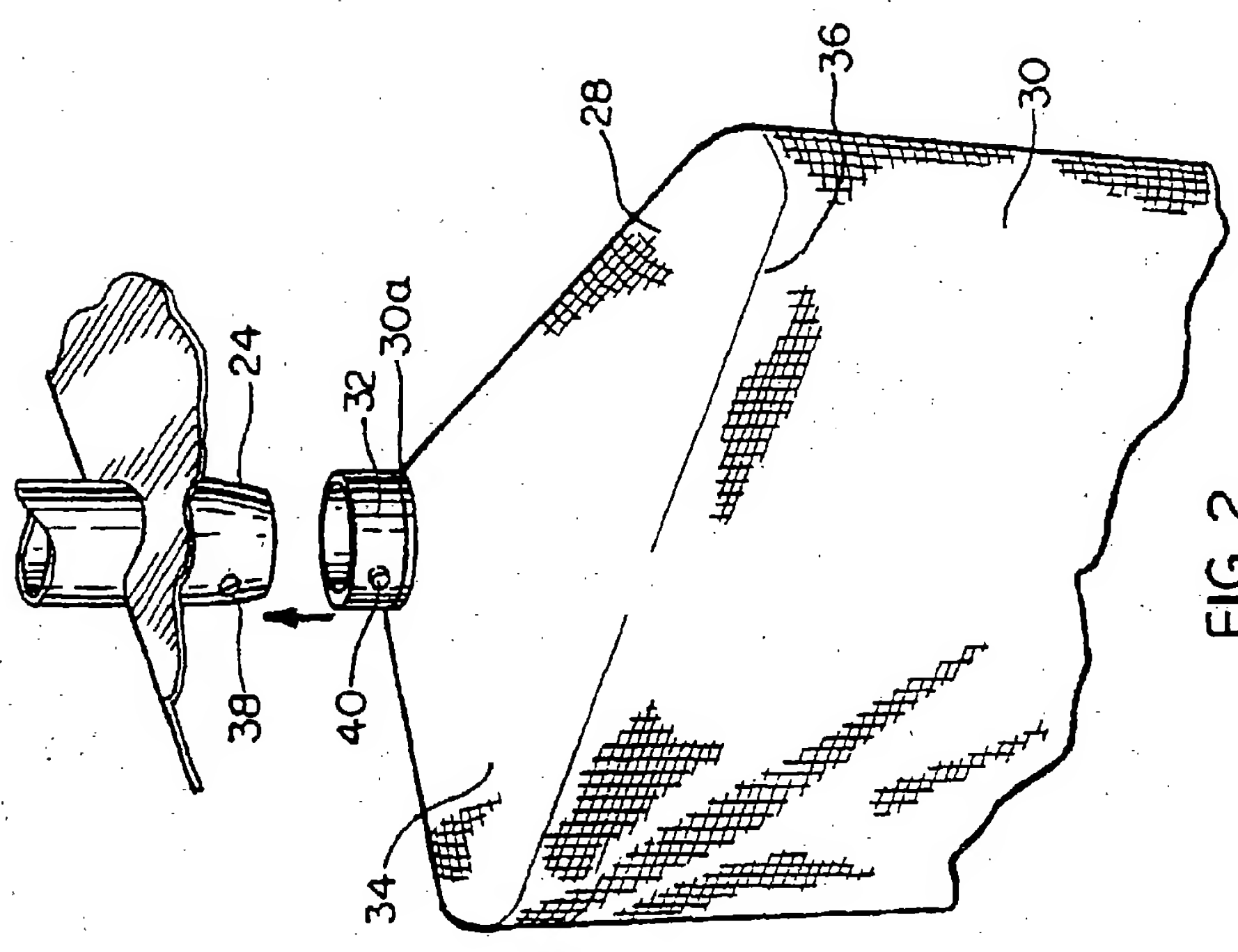


FIG. 2

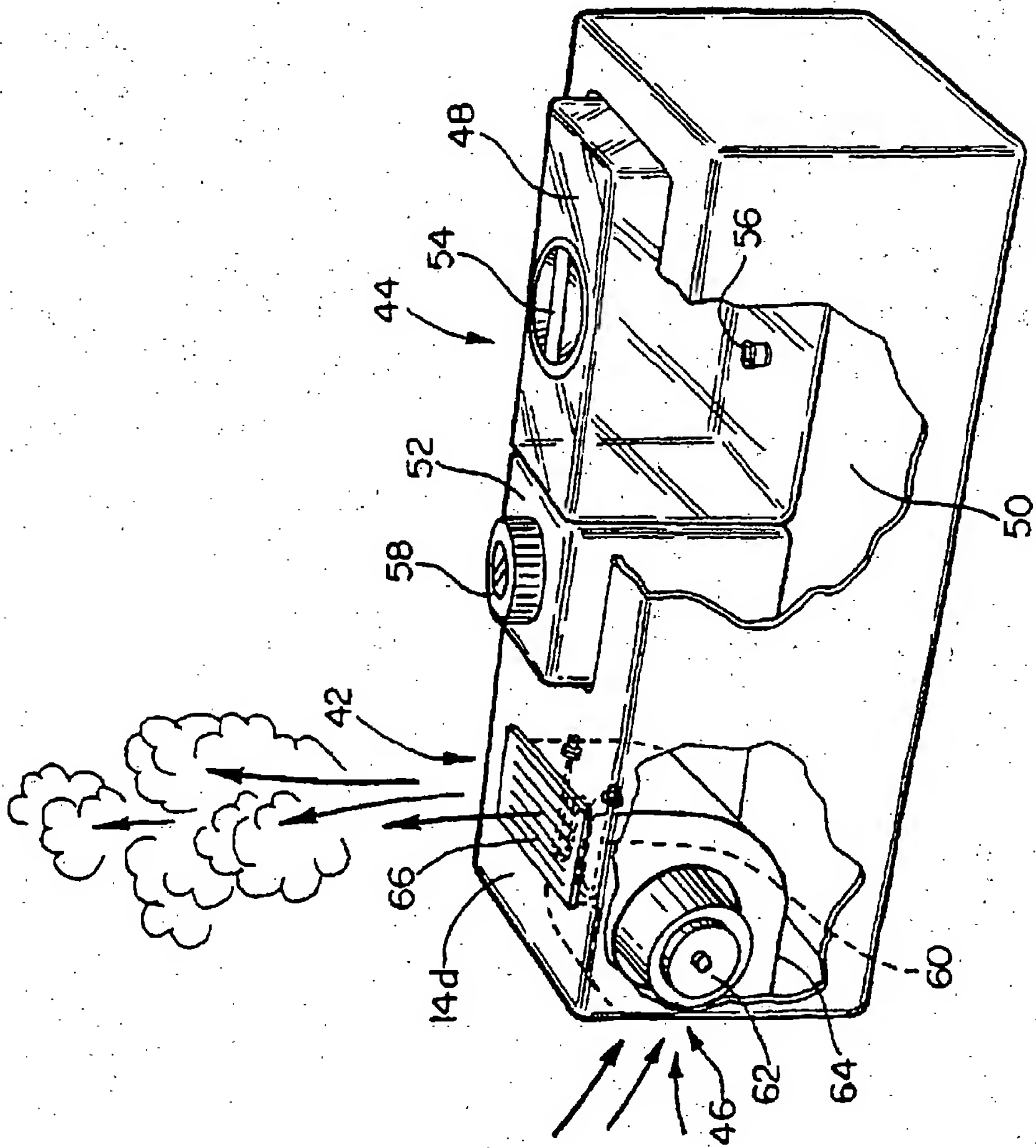


FIG. 3

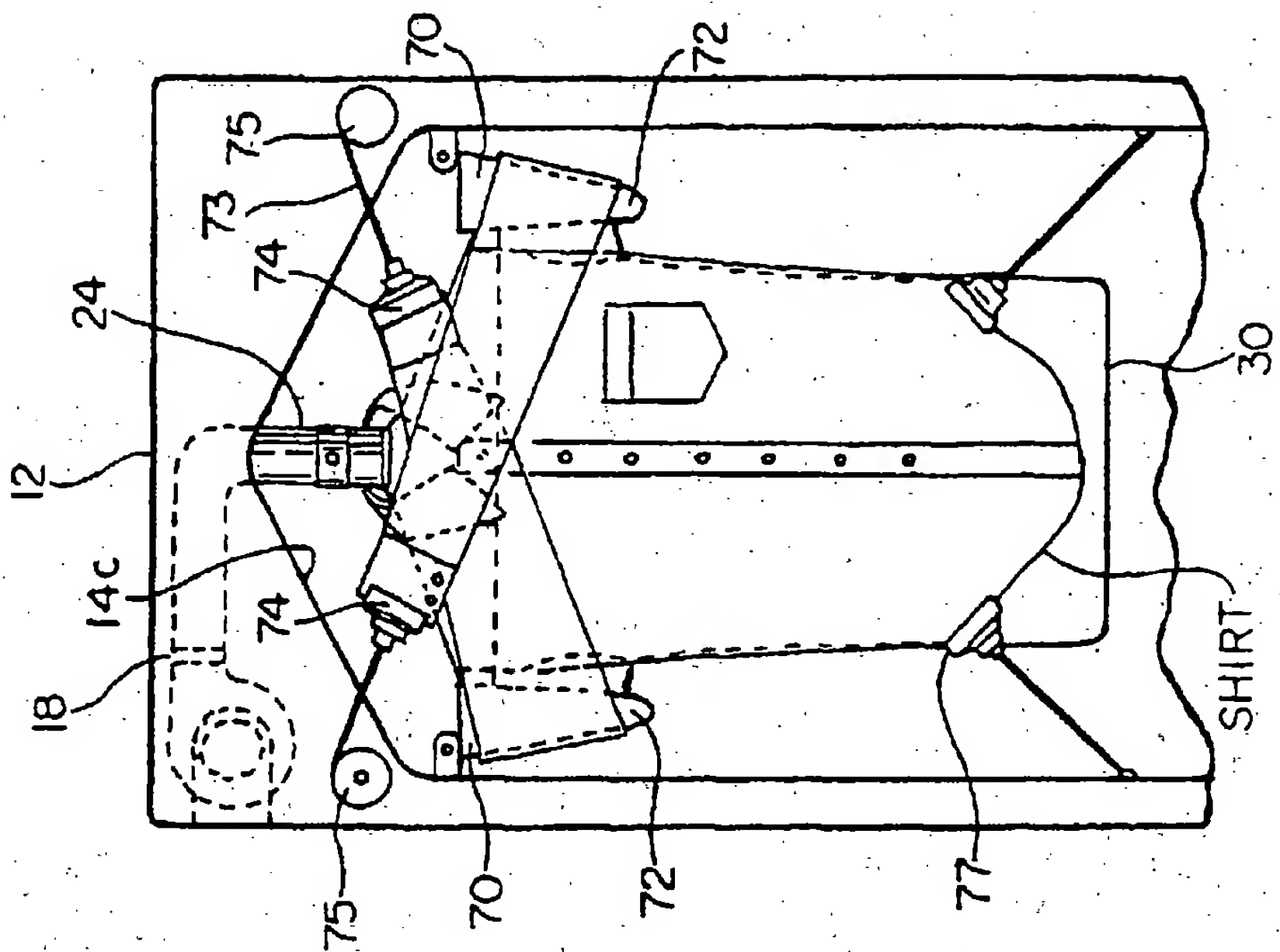


FIG. 4

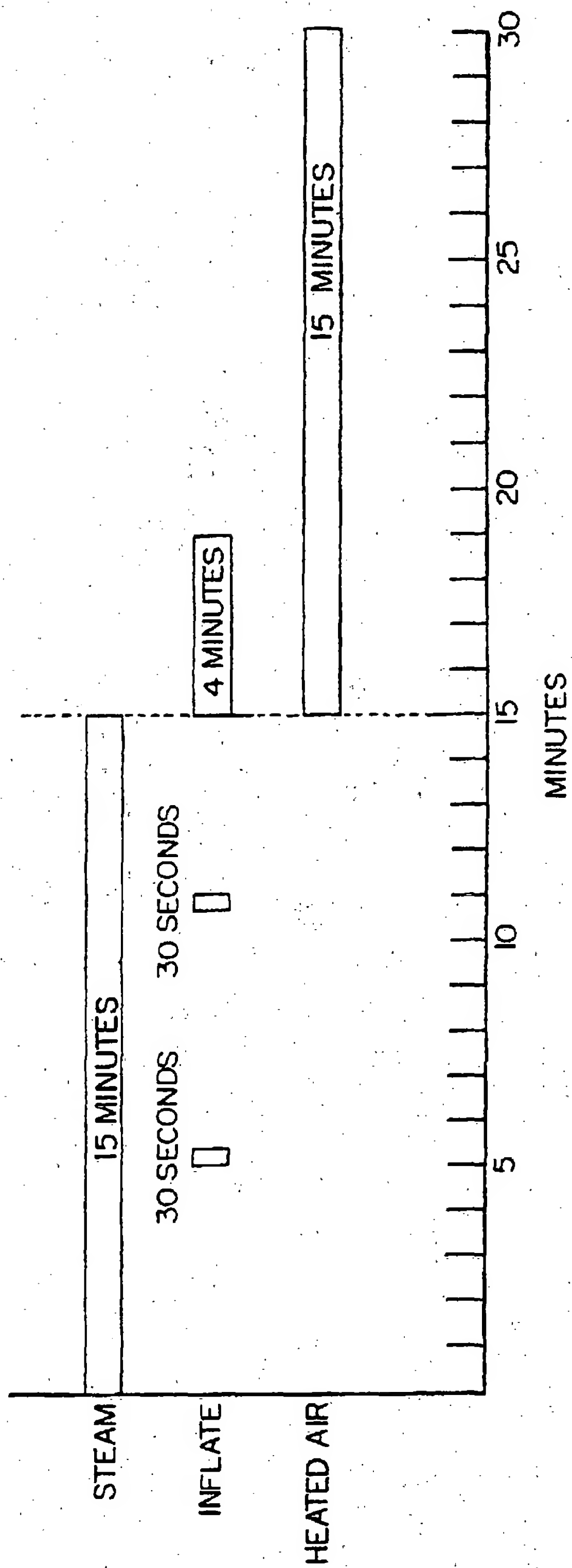


FIG. 5

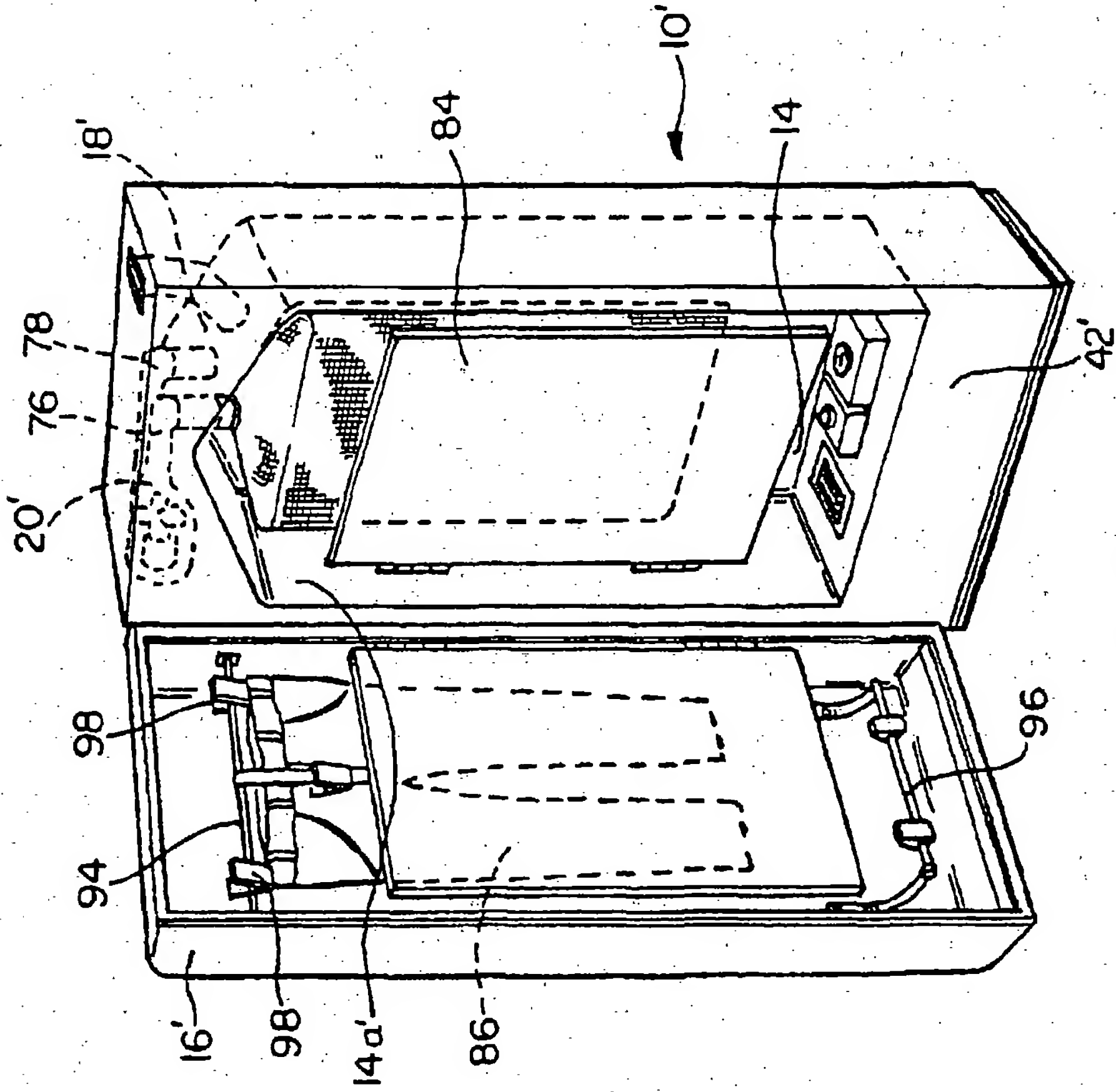


FIG. 6

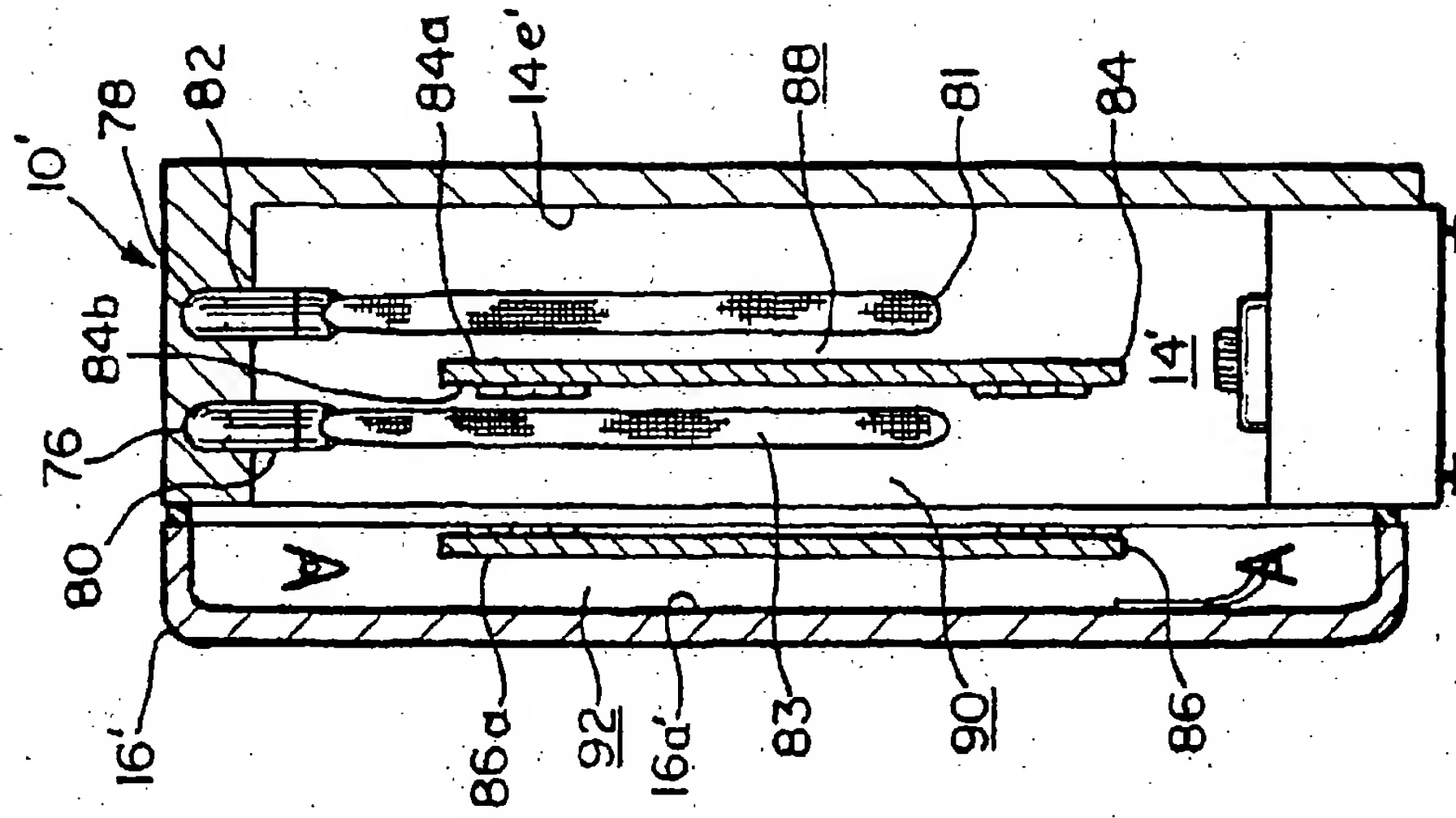


FIG. 7

GENTLE DRY

WARM AIR: 45 TO 105 MINUTES
(DEPENDING ON CLOTH STYLE)

STEAM INJECTION: 5 MINUTES

WARM AIR: 10 MINUTES

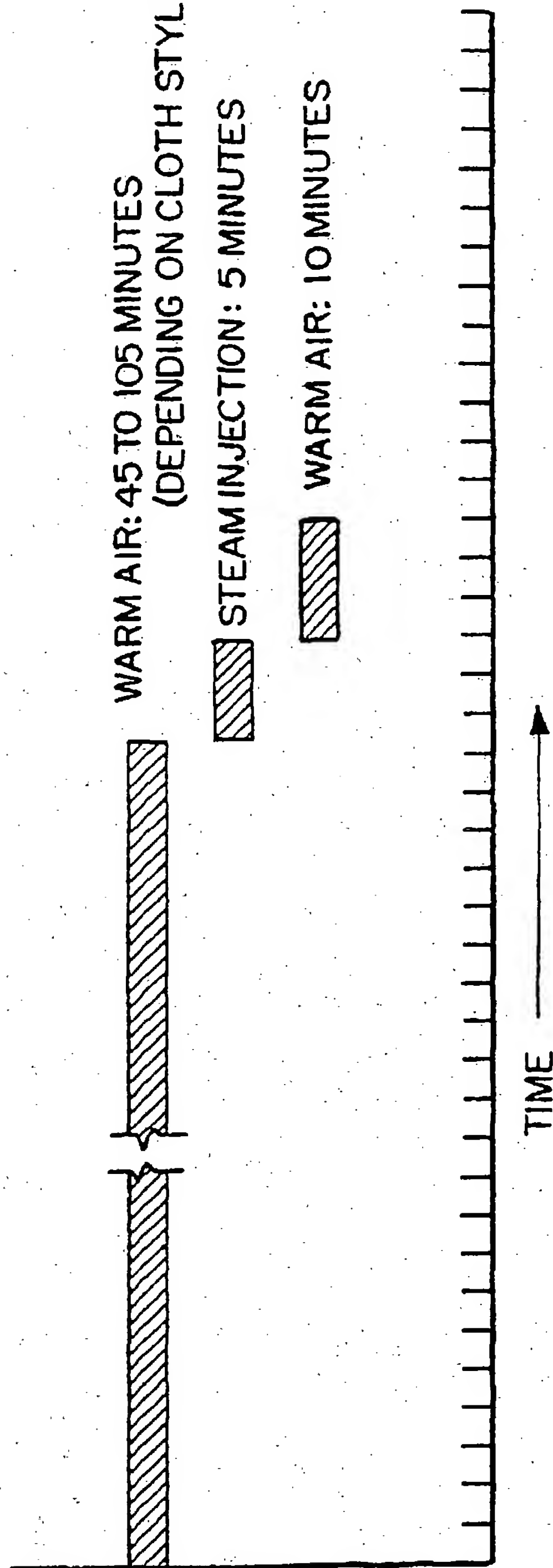


FIG. 8

(19)



Europäisches Patentamt

European Patent Office

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(11)

EP 0 816 552 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
20.05.1998 Bulletin 1998/21

(51) Int Cl.⁶ D06F 73/02

(43) Date of publication A2:
07.01.1998 Bulletin 1998/02

(21) Application number: 97304447.2

(22) Date of filing: 24.06.1997

(84) Designated Contracting States:

AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: 26.06.1996 US 20599 P

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(54) Clothes treating apparatus

(57) A clothes treating apparatus and method for subjecting clothes items to moisture, pressure and heat for refreshing and dewrinkling the clothes items. A cabinet (12) defines an interior region (14) for receiving clothes, the interior region having opposed inner side surfaces (14a, 14b). A door (16) is hingedly connected to the cabinet for closing the interior region. An inflatable hanger (26) for supporting shirt-like clothes items is disposed within the interior region. A blower (20) selectively inflates the inflatable hanger for pressing the shirt-like clothes item against the cabinet inner side surfaces. A steam generation means (44) is provided for introducing moist air into the cabinet for humidifying the clothes item disposed therein. A heater (60) and fan (62) supply heated air into the interior region for drying the shirt-like clothes items disposed therein. During the dewrinkling cycle, steam is introduced into the interior region while the inflatable hanger assembly is periodically inflated. Following the steaming period, the inflatable hanger is inflated while the clothes are subject to warm air such that the clothes wrinkles are pressed out and the clothes are partially dried, setting the clothes in a smooth appearance. Heated air is then delivered into the interior region to completely dry the clothes item.

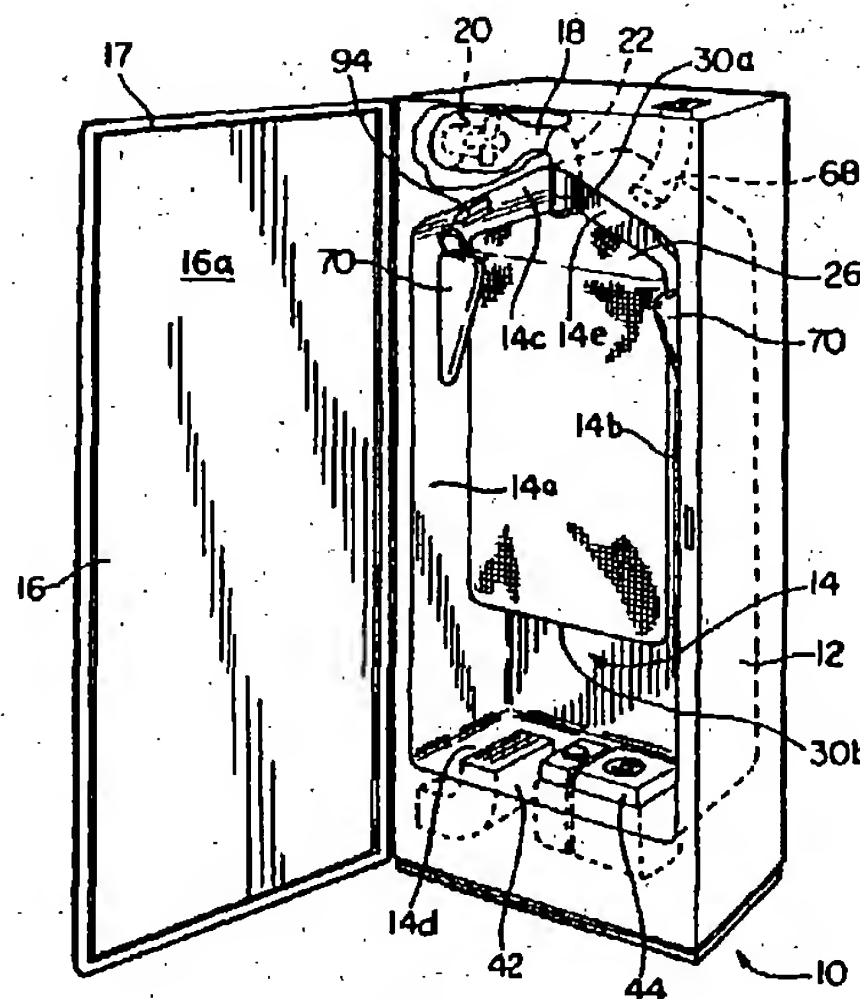


FIG. 1

EP 0 816 552 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 97 30 4447

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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Y	---	4,5,7,16	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 March 1998	Examiner Norman, P
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